IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of Atty. Docket

HUBERT C.F. MARTENS ET AL. PHNL 020573

Serial No.: 10/517,917 Group Art Unit: 2609

Filed: December 14, 2004 Examiner: H.G. Heyi

OPTICAL DATA STORAGE MEDIUM AND USE OF SUCH MEDIUM

Commissioner for Patents
P.O. Box 1450
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Sir:

# APPEAL BRIEF

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(i) Real Party in Interest

The real party in interest in this application is KONINKLIJKE PHILIPS ELECTRONICS N.V. by virtue of an assignment from the inventors recorded on December 14, 2004, at Reel 016543, Frames 0626.

(ii) Related Appeals and Interferences

There are no other appeals and/or interferences related to this application.

(iii) Status of Claims

Claims 1-11 are currently pending and stand finally rejected by the Examiner. Appellants hereby appeal the rejection of claims 1-11.

(iv) Status of Amendments

There was one Response filed on January 3, 2008, after final rejection of the claims on November 27, 2007, this Response having been considered by the Examiner.

(v) Summary Of Claimed Subject Matter

The subject invention relates to a multi-stack optical data storage medium for recording and reading using a focused radiation beam entering through an entrance face of the medium during recording and reading. This is shown in Fig. 3, and described in the specification on page 6, lines 3-5.

The subject invention, as claimed in claim 1, includes "a first substrate having, on a side thereof, a first recording stack $L_0$ comprising a recordable type $L_0$ recording layer comprising a dye, and formed in a first $L_0$ guide groove, and a first reflective layer present between the $L_0$ recording layer and the first substrate". This is shown in Fig. 3, and described in the specification on page 6, lines 5-9.

The subject invention, as claimed in claim 1, further includes "a second substrate having, on a side thereof, a second recording stack L1 comprising a recordable type L1 recording layer, said second recording stack being at a position closer to the entrance face than the $L_0$ recording stack and formed in a second L1 guide groove". This is shown in Fig. 3, and described in the specification on page 6, lines 9-12.

In addition, as claimed in claim 1, the subject invention includes "a transparent spacer layer sandwiched between the first and second recording stacks, said transparent spacer layer having a thickness substantially larger than the depth of focus of the focused radiation beam". This is shown in Fig. 3, and described in the specification on page 6, lines 13-14. It should be noted that

while the specification indicates that the thickness of the transparent spacer layer is approximately 40 μm, the depth of focus of the focused radiation beam needs to be at least the depth of the grooves, which in the embodiments of the subject invention is 25-40 nm or .025-.040 μm, which is substantially smaller than 40 μm.

Finally, the subject invention, as claimed in claim 1, includes "the first $L_0$ guide groove has a depth $G_{L0}$ < 100 nm." This is described in the specification on page 7, line 9 and page 8, lines 6 and 18, where it is indicated that the grooves are 25-40 nm deep.

Claim 5 includes the limitation "wherein said multi-stack optical data storage medium further comprises a dielectric layer present at a side of the $L_0$ recording layer opposite from the side where the first reflective layer is present." This is described in the specification on page 4, lines 13-14, and in the description of "Stack 1" on page 7, line 14.

Claim 7 includes the limitation "wherein said multi-stack optical data storage medium further comprises a second reflective layer comprising a metal present at a side of the $L_0$ recording layer opposite from the side where the first reflective layer is present." This is described in the specification on page 4, lines 17-19, an in the description of "Stack 2" on page 8, lines 11-12.

Claim 11 includes the limitation "Use of an optical data storage medium as claimed in claim 1 for multi stack recording with a reflectivity level of the first recording stack $L_0$ as such of at

least 0.5 and modulation of recorded marks in the $L_0$ recording layer of at least 0.6 at a radiation beam wavelength of approximately 655 nm. This is supported in the specification on page 7, lines 24-33.

(vi) Grounds of Rejection to be Reviewed on Appeal

(A) Whether the invention, as claimed in claims 1-11, is anticipated, under 35 U.S.C. 102(b), by U.S. Patent 5,764,619 to Nishiuchi et al.

(vii) Arguments

**(A) The Rejection of Claims 1-11 Under 35 U.S.C. 102(b)**

35 U.S.C. 102(b) states:

"A person shall be entitled to a patent unless -

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States,...."

The Nishiuchi et al. patent discloses an optical recording medium having two separate recording layers.

As noted in MPEP § 2131, it is well-founded that "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California,* 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Further, "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond,* 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

Appellants submit that Nishiuchi et al. neither discloses nor suggests the first recording stack $L_0$ having a recordable type $L_0$ recording layer comprising a dye, in which the first $L_0$ guide groove has a depth $G_{L0} < 100$ nm.

A recordable medium comprising a dye recording layer is essentially different from a rewritable medium comprising phase change recording layers. See, e.g., page 2, lines 24-34 of the specification as filed, where it is described that typically a recording medium including a dye recording layer has groove depths much larger than 100 nm, e.g., about 200 nm. This is because the dye recording layer typically is much thicker than a phase change type recording layer which has several implications for the optical stack design. The medium claimed in claim 1 is a so-called inverted $L_0$ stack design. From a dual-stack medium production point of view, an inverted $L_0$ stack structure is preferred which means that the recording layer of the $L_0$ stack is present at a side of the reflective layer other than the side of the substrate with groove structure (see page 3, lines 6-9 of the specification as filed).

According to the invention, the first $L_0$ guide groove has a depth $G_{L0} < 100$ nm. For a dye medium, this is not at all conventional see, e.g., European Patent Application No. EP1067535A2 (corresponding to U.S. Patent Application Publication No. 2005/0063295) as mentioned on page 2, line 24 of the specification as filed.

Appellants submit that a person skilled in the art starting from Nishiuchi et al. and confronted with the problem of how to achieve a recordable dual stack medium which has a reflection value of the $L_0$ recording stack higher than 25%, preferably higher than 50%, at a radiation beam wavelength of approximately 655 nm, would

not have an incentive to apply a dye $L_0$ recording stack of the inverted type because Nishiuchi et al. does not mention such a dye $L_0$ recording stack of the inverted type.

In the current Office Action, the Examiner states "Examiner agrees on the premise that recording medium comprising a dye recording layer is different from a rewritable medium comprising phase change recording layer. However, the Nishiuchi reference used in the prior office action teaches three different methods including dye recording layer and phase change recording that could be employed to form the recording layer. Please see col 14 lines 37-67."

Appellants acknowledge that Nishiuchi discloses that a dye layer or a phase change layer may be used for the recording layer. However, the only disclosed embodiment in Nishiuchi that substantially meets the limitations of, for example, claim 1, is Example 5 at col. 46, lines 22-31, which utilizes a phase change recording layer, not a dye recording layer. There is no disclosure in Nishiuchi that a dye recording layer could be substituted for the phase change recording layer while retaining the groove depth (50 nm). In fact, as Appellants had noted above, the prior art, notably EP1067535, specifically indicates a groove depth, when using a dye recording layer, of approximately 194 nm.

Appellants submit that there is nothing in Nishiuchi that would lead one to expect satisfactory performance of a dye recording layer when the groove depth is less than 100 nm, as set forth in claim 1.

Based on the above arguments, Appellants believe that the subject invention is not rendered obvious by the prior art and is patentable thereover. Therefore, Appellants respectfully request that this Board reverse the decisions of the Examiner and allow this application to pass on to issue.

Respectfully submitted,

by /Edward W. Goodman/
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(viii) Claims Appendix

1. (Previously Presented) A multi-stack optical data storage medium for recording and reading using a focused radiation beam entering through an entrance face of the medium during recording and reading, comprising:

a first substrate having, on a side thereof, a first recording stack $L_0$ comprising a recordable type $L_0$ recording layer comprising a dye, and formed in a first $L_0$ guide groove, and a first reflective layer present between the $L_0$ recording layer and the first substrate;

a second substrate having, on a side thereof, a second recording stack $L_1$ comprising a recordable type $L_1$ recording layer, said second recording stack being at a position closer to the entrance face than the $L_0$ recording stack and formed in a second $L_1$ guide groove; and

a transparent spacer layer sandwiched between the first and second recording stacks, said transparent spacer layer having a thickness substantially larger than the depth of focus of the focused radiation beam,

characterized in that the first $L_0$ guide groove has a depth $G_{L0}$ < 100 nm.

2. (Previously Presented) The multi-stack optical data storage medium as claimed in claim 1, wherein $G_{L0}$ < 80 nm and the first $L_0$ guide groove has a full half maximum width $W_{L0}$< 350 nm.

3. (Previously Presented) The multi-stack optical data storage medium as claimed in claim 1, wherein 25 nm < $G_{L0}$ < 40 nm and the first reflective layer comprises a metal and has a thickness > 50 nm.

4. (Previously Presented) The multi-stack optical data storage medium as claimed in claim 1, wherein the recordable type $L_0$ recording layer has a thickness between 70 nm and 150 nm measured on the land portion of the guide groove.

5. (Previously Presented) The multi-stack optical data storage medium as claimed in claim 1, wherein said multi-stack optical data storage medium further comprises a dielectric layer present at a side of the $L_0$ recording layer opposite from the side where the first reflective layer is present.

6. (Previously Presented) The multi-stack optical data storage medium as claimed in claim 5, wherein the dielectric layer has a thickness in the range of 5 nm - 120 nm.

7. (Previously Presented) The multi-stack optical data storage medium as claimed in claim 1, wherein said multi-stack optical data storage medium further comprises a second reflective layer comprising a metal present at a side of the $L_0$ recording layer opposite from the side where the first reflective layer is present.

8. (Previously Presented) The multi-stack optical data storage medium as claimed in claim 7, wherein the second reflective layer has a thickness in the range of 5 nm -15 nm.

9. (Previously Presented) The multi-stack optical data storage medium as claimed in claim 7, wherein the second reflective layer mainly comprises a metal selected from the group of Ag, Au, Cu, Al.

10. (Previously Presented) The multi-stack optical data storage medium as claimed in claim 1, wherein the effective reflection level of the stacks is at least 0.18 at a radiation beam wavelength of approximately 655 nm.

11. (Previously Presented) Use of an optical data storage medium as claimed in claim 1 for multi stack recording with a reflectivity level of the first recording stack $L_0$ as such of at least 0.5 and modulation of recorded marks in the $L_0$ recording layer of at least 0.6 at a radiation beam wavelength of approximately 655 nm.

(ix) Evidence Appendix

There is no evidence which had been submitted under 37 C.F.R. 1.130, 1.131 or 1.132, or any other evidence entered by the Examiner and relied upon by Appellant in this Appeal.

(x) Related Proceedings Appendix

Since there were no proceedings identified in section (ii) herein, there are no decisions rendered by a court or the Board in any proceeding identified pursuant to paragraph (c)(1)(ii) of 37 C.F.R. 41.37.